

Uni-axial 3-D shape measurement by liquid crystal digital shifter

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Summary

A uni-axial three dimensional surface measurement by a liquid crystal digital shifter(LCDC) is proposed using a telecentric optical system. Distance information can be determined by measuring the contrast in the projected grating pattern. The magnification of the object image captured by a CCD camera is adjusted constant by changing the focus distance. A shadow less measurement of the object's area is archived by using a uni-axial system. The liquid crystal digital shifter is a powerful tool to make arbitrary intensity and frequency distribution. Surface profiles of some mechanical parts were measured to demonstrate this method.

